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Ms. Virginia Manoharan
Examiner
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

August 26, 2005

Re: U.S. Patent Application Number 09/745,896
Filed: December 21, 2000
For: METHOD FOR PURIFICATION OF ACRYLIC ACID
Applicant: Nippon Shokubai Co., Ltd.

Dear Ms. Manoharan:

Thank you for your call of Tuesday, August 23, 2005.

First, it is my understanding that you have requested, for scanning, certain documents including a European Search Report and a PTO-1449 form. I hope you will find what you need in the following documents which are being faxed with this letter:

- 1) Information Disclosure Statement dated February 17, 2003 (five pages);
- 2) EPO Communication and Search Report (three pages total);
- 3) unsigned PTO-1449 form (one page); and
- 4) Fax from the USPTO to the undersigned dated January 24, 2004 and consisting of Fax Cover Sheet and two signed PTO-1449 forms (three pages total).

Second, it is my understanding that you would like to know the basis for claims 16 and 17.

Claim 16 requires: $3 \leq (\text{furfural concentration by weight})/(\text{acrolein concentration by weight}) \leq 100$. Basis for such is found at:

- 1) page 6, lines 1-19 where the concentration ratio of furfural to acrolein being 100 or below is taught.
- 2) in Example 1 where the concentration ratio of furfural to acrolein is 3. Please see Table 1 on page 23 of the specification.
- 3) in Example 3 where the concentration ratio of furfural to acrolein is 25. Please see Table 1 on page 23 of the specification.
- 4) in Example 4 where the concentration ratio of furfural to acrolein is 75. Please see Table 1 on page 23 of the specification.

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Claim 17 requires: $3 \leq (\text{furfural concentration by weight})/(\text{acrolein concentration by weight}) \leq 30$. Basis for such is found at:

- 1) page 6, lines 6-19 where the concentration ratio of furfural to acrolein being between 2 and 30 (including the value 2 and 30) is taught.
- 2) in Example 1 where the concentration ratio of furfural to acrolein is 3. Please see Table 1 on page 23 of the specification.
- 3) in Example 3 where the concentration ratio of furfural to acrolein is 25. Please see Table 1 on page 23 of the specification.

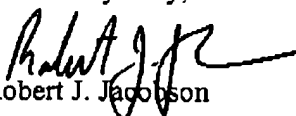
Third, it is my understanding that you would like to know the literal basis for claim 1. There is no paragraph in the specification having claim 1 in its present form. However, there is substantive basis for the literal form. As to step "a)" please see the above noted basis as to claim 16. As to step "b)," please see original claim 1 and original claim 7. As to step "c)," please see page 9, lines 17-23. As to step "d)," please see original claim 1. As to the use of "then" in claim 1, please see the specification as a whole, including the drawings.

To provide a literal basis in the specification, you may by Examiner's amendment add the following paragraph to the specification on page 26, between lines 16 and 17.

A present method for purification of acrylic acid includes the steps of a) providing a crude acrylic acid having a concentration ratio of furfural to acrolein by weight that is adjusted so as to satisfy the following equation: $3 \leq (\text{furfural concentration by weight})/(\text{acrolein concentration by weight}) \leq 100$; then b) charging the crude acrylic acid with an aldehyde treatment chemical, with the aldehyde treatment chemical comprising a hydrazine compound; then c) reacting the hydrazine compound with aldehydes of the crude acrylic acid such that, after said step of reacting and prior to a step of distilling the crude acrylic acid, a concentration of said hydrazine compound in said crude acrylic acid is not more than 100 ppm by weight; and then d) distilling a the crude acrylic acid containing said furfural and acrolein as impurities.

If there are remaining issues, please do not hesitate to call.

Yours very truly,


Robert J. Jacobson



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Europäisches
Patentamt

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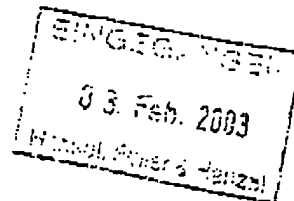
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ALLEMAGNE



Datum/Date
04.02.03

Zichen/Ref./Réf. 11102/CH/ajk	Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°. 00128183.1-2103-
Anmelder/Applicant/Demandeur/Pateninhaber/Propriétaire/Titulaire Nippon Shokubai Co., Ltd.	

COMMUNICATION

The European Patent Office herewith transmits as an enclosure the European search report for the above-mentioned European patent application.

If applicable, copies of the documents cited in the European search report are attached.

☒ Additional set(s) of copies of the documents cited in the European search report is (are) enclosed as well.

The following specifications given by the applicant have been approved by the Search Division:

☒ abstract

☒ title

☐ The abstract was modified by the Search Division and the definitive text is attached to this communication.

The following figure will be published together with the abstract: NONE

REFUND OF THE SEARCH FEE

If applicable under Article 10 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 12 8183

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 5 759 358 A (UPMACIS RITA KARINA ET AL) 2 June 1998 (1998-06-02) * abstract * * column 4, line 60-65 * * column 5, line 31-40 * * example 2 * * table 4 *	1-4	C07C51/44 C07C51/487 C07C57/07
X	FR 2 753 445 A (ATOCHEM ELF SA) 20 March 1998 (1998-03-20) * page 11, line 8-31 * * page 15, line 21-25 *	1-4	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			C07C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 22 January 2003	Examiner Delanghe, P
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date O : document cited in the application L : document cited for other reasons A : member of the same patent family, corresponding document</p>			

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EPO FORM 1500 03 02 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 00 12 8183

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

22-01-2003

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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EPO FORM P4599

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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Fax Cover Sheet

Date: 23 Jan 2004

To: Atty. Robert J. Jacobson	From: Virginia Manoharan
Application/Control Number: 09/745,896	Art Unit 1764
Fax No.: 612-109-8300	Phone No.: 571-272-1450
Voice No.: (651) 696-4008	Return Fax No.: 571-273-1450
Re: Forms-1449	CC:
<input type="checkbox"/> Urgent <input type="checkbox"/> For Review <input type="checkbox"/> For Comment <input type="checkbox"/> For Reply <input checked="" type="checkbox"/> Per Your Request	

Comments:

Attached copies of PTO-1449 as per your request.

Number of pages 3 including this page

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PTO/S&B/A (10-01)

Use through 10/31/2002. OMB 0951-0031

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Substitute for form 1448-VPTO

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known

Application Number	09/745,896
Filing Date	December 21, 2000
First Named Inventor	Yoshiaki Ishii
Art Unit	1764
Examiner Name	
Attorney Docket Number	2002-1411.0R1

Sheet 1 of 1

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code (if known)			
VH	b	US- 6,739,358		06/02/1998	Bauer, Jr., et al.	
VH	c	US- 6,352,619	B1	03/05/2002	Fujisawa et al.	
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FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	Yes
		Office	Number	Kind (if known)				
VH	c	FR	2 753 445	A1	03/20/1998	ELF ATOCHEM		

Examiner
Signature

V. Manoharan

Date
Considered

9/21/03

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1. Applicant's unique citation designation number (optional). 2. See Kind Codes of USPTO Patent Documents at www.uspto.gov or MPEP 801.04. 3. Enter Office that issued the document by the two-letter code (WIPO Standard ST.3). For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. Applicant is to place a check mark here if English language Translation is attached.

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